

CLAIMS

1. A peptide consisting of 10 - 25 contiguous amino acids in the amino acid sequence of human WT1 shown in SEQ ID NO: 1, which binds
5 to HLA-DRB1*0405 and induces helper T cells.

2. The peptide of claim 1, which comprises an amino acid sequence set forth in any one of SEQ ID NOS: 2 - 23.

3. The peptide of claim 2, which comprises the amino acid sequence set forth in SEQ ID NO: 24.

10 4. A peptide of 10 - 25 amino acids, which comprises an amino acid sequence wherein the amino acid residue at position 1, 4, 6 and/or 9 of an amino acid sequence set forth in any one of SEQ ID NOS: 2 - 23 is substituted by another amino acid residue, and which binds to an HLA-DRB1*0405 and induces helper T cells.

15 5. The peptide of claim 4, which comprises an amino acid sequence wherein the amino acid residue at position 1, 4, 6 and/or 9 of an amino acid sequence set forth in any one of SEQ ID NOS: 2 - 23 is substituted by an amino acid residue selected from the following amino acids:

20 phenylalanine, tyrosine, tryptophan, valine, isoleucine, leucine and methionine for the position 1;

valine, isoleucine, leucine, methionine, aspartic acid and glutamic acid for the position 4;

25 asparagine, serine, threonine, glutamine, lysine and aspartic acid for the position 6; and

aspartic acid, glutamic acid and glutamine for the position 9.

6. The peptide of claim 5, which comprises an amino acid sequence wherein the amino acid residue at position 3, 6, 8 and/or 11 of the amino acid sequence set forth in SEQ ID NO: 24 is substituted by an
30 amino acid residue selected from the following amino acids:

phenylalanine, tryptophan, valine, isoleucine, leucine and methionine for the position 3;

valine, isoleucine, methionine, aspartic acid and glutamic acid for the position 6;

5 asparagine, serine, threonine, glutamine, lysine and aspartic acid for the position 8; and

aspartic acid, glutamic acid and glutamine for the position 11.

7. A peptide comprising a peptide described in any one of claims 1 to 6 together with a cancer antigen peptide.

10 8. A polynucleotide encoding a peptide described in any one of claims 1 to 7.

9. An expression vector containing the polynucleotide described in claim 8.

10. A cell containing the expression vector described in claim 9.

15 11. A process for producing a peptide described in any one of claims 1 to 7, which comprises culturing the cell described in claim 10 under the condition where the peptide can be expressed.

12. An antibody which specifically binds to a peptide described in any one of claims 1 to 6.

20 13. A pharmaceutical composition which comprises a peptide described in any one of claims 1 to 7, an expression vector described in 9 or a cell described in claim 10, in association with a pharmaceutically acceptable carrier.

25 14. The pharmaceutical composition of claim 13, which is a therapeutic or preventive agent for cancer.

30 15. The pharmaceutical composition of claim 13, which is an inducer of helper T cells, and which comprises a peptide described in any one of claims 1 to 6; an expression vector described in claim 9 related to a peptide of any one of claims 1 to 6; or a cell described in claim 10 related to a peptide of any one of claims 1 to 6, in association with a

pharmaceutically acceptable carrier.

16. The pharmaceutical composition of claim 13, which is an enhancer of cancer vaccine efficacy, and which comprises a peptide described in any one of claims 1 to 6; an expression vector described in
5 claim 9 related to a peptide of any one of claims 1 to 6; or a cell described in claim 10 related to a peptide of any one of claims 1 to 6, in association with a pharmaceutically acceptable carrier.

17. The pharmaceutical composition of claim 13, which is a therapeutic or preventive agent for cancer, and which comprises a peptide
10 described in claim 7; an expression vector described in claim 9 related to a peptide of claim 7; or a cell described in claim 10 related to a peptide of claim 7, in association with a pharmaceutically acceptable carrier.

18. Use of a peptide described in any one of claims 1 to 7, an expression vector described in claim 9 or a cell described in claim 10 for
15 the manufacture of a therapeutic or preventive agent for cancer.

19. A method of treating or preventing cancer, which comprises administering a peptide described in any one of claims 1 to 7, an expression vector described in claim 9 or a cell described in claim 10 to a subject in need thereof.

20. A pharmaceutical composition which comprises a peptide described in any one of claims 1 to 6 in combination with a cancer antigen peptide.

21. The pharmaceutical composition of claim 20, which is used for treating or preventing cancer.

22. A kit for treating or preventing cancer, which comprises a pharmaceutical composition comprising a peptide of any one of claims 1 to 6 in association with a pharmaceutically acceptable carrier, and a pharmaceutical composition comprising a cancer antigen peptide in association with a pharmaceutically acceptable carrier.

23. Use of a peptide of any one of claims 1 to 6 in combination

with a cancer antigen peptide in the manufacture of a therapeutic or preventive agent for cancer.

24. A method of treating or preventing cancer, which comprises administering a peptide of any one of claims 1 to 6 in combination with a cancer antigen peptide to a subject in need thereof.
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